Zhao **Liu**

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Education

Carnegie Mellon University - School of Computer Science   *Pittsburgh, PA*

MASTER OF SCIENCE IN AUTOMATED SCIENCE (GPA:3.80/4.33)   *Aug. 2019 - Exp. May 2021*

- Teaching Assistant: Algorithms and Advanced Data Structures.
- Relevant Courses: Cloud Computing, Machine Learning, Web Apps, Computer System, Algorithms, Computer Graphics.

Jacobs University Bremen - Dept. of Computer Science & Electrical Engineering   *Bremen, Germany*

BACHELOR OF SCIENCE IN COMPUTER SCIENCE (GPA:3.56/4.00)   *Aug. 2015 - May 2018*

- Teaching Assistant: Programming Lab in C; Programming Lab in Python; Electrical Engineering Lab.
- Relevant Courses: Linear Algebra, Probability, Functional Programming, Computer Network, Computer Graphics, Image Analysis.
- Awards: Merit-Based Scholarship.

Work Experience

PricewaterhouseCoopers Advisory   *Remote*

DATA ENGINEERING INTERN   *May 2020 - Aug. 2020*

- Provided PwC Advisory's clients with solutions for detecting and analyzing Industry IoT security risks as a 3rd party contractor.
- Built data pipelines for extracting, cleaning, and loading data from various sources into **Elasticsearch** database using **Logstash** scripts.
- Applied time-series anomaly detection models and rule-based models using **Python** to identify breakout and anomalies in the data set.
- Used **Kibana** to develop interactive visualization dashboards that meet the needs of engineer and manager personas to investigate security breaches and spot potential compromises, significantly improving the informativeness and accuracy compared to the old solutions.

Infervision, Infrastructure Team   *Beijing, China*

SOFTWARE ENGINEER   *Aug. 2018 - May 2019*

- Designed & implemented a deploying and monitoring infrastructure for the company's AI solution using **Django/Docker**, to provide easy configuration and better security, ultimately reducing the time and cost of onsite maintenance by over **40%** among over **350** hospitals.
- Designed & built web services using **Flask/Kubernetes** for scheduling deep learning model training and providing logs and email notification.
- Maintained and updated company's internal services with **RESTful** API using Python, including SSO authentication and authorization and Jira/Confluence plugins.

Projects

High Performance Twitter Analytics Web Service   *Pittsburgh, PA*

FINAL PROJECT FOR CLOUD COMPUTING, CARNEGIE MELLON UNIVERSITY   *Jan. 2020 - May. 2020*

- Performed ETL using **MapReduce** on 1.2TB twitter dataset and loaded the data into **MySQL** and **Hbase** that deployed on **AWS** and **Azure**.
- Implemented algorithms for calculating the interaction scores between users and trending phrases by the TF-IDF scores using **Java**.
- Deployed a RESTful web services with **load balancing** and **auto-scaling** policies to provide high availability and low response time when handling massive requests using Docker/Kubernetes.

VR Data Visualization   *Bremen, Germany*

THESIS PROJECT, JACOBS UNIVERSITY BREMEN   *Jan. 2018 - May 2018*

- Designed and implemented a virtual reality software visualizing high dimensional data using **python**, **Unity** and Google Glasses
- Compared visual results with other high dimensional data visualization methods including 2d matrix plot and explored how dimensional reduction methods including **PCA** and **t-SNE** help the visualization.

Scotty3D (https://github.com/zhaoliu1996/Scotty3D)   *Pittsburgh, PA*

FINAL PROJECT FOR COMPUTER GRAPHICS, CARNEGIE MELLON UNIVERSITY   *Sep. 2017 - Dec. 2017*

- Created a polygon-based mesh editor with geometry manipulation with Half-Edges data structure using **C++**.
- Implemented a realistic ray-tracing algorithm using Monte Carlo methods and global illumination.

Skills

Programming	Proficient in C/Java/Python, Familiar with C++/Golang/Haskell/Scala/Asm-x86
Web Development	HTML/CSS/Javascript/Nginx/Django/Flask/Spring Boot/AWS/Azure/GCP
Tools	Docker/Kubernetes/Terraform/MapReduce/Kafka/Samza/Spark/ELK
Database	MySQL/MongoDB/Apache HBase/Redis/Elasticsearch/Neo4j